

# Ixef® GS-1022

## polyarylamide

Ixef® GS-1022 is a 50% glass-fiber reinforced grade of polyarylamide (PARA) available in several colors. Parts molded from these colored resins can withstand high-energy gamma radiation without significant change in appearance and physical properties. Ixef® GS-1022 resins demonstrate no evidence of cytotoxicity, sensitization, intracutaneous reactivity or acute systemic toxicity, based on biocompatibility testing as defined by ISO 10993-1.

This resin offers superior strength and stiffness combined with outstanding surface gloss and exceptional flow and is well suited for medical applications, such as single use

surgical instruments and structural device housings, and applications in food service equipment.

Colors available:

- Brown: GS-1022 BN01
- Blue: GS-1022 BU01
- Green: GS-1022 GN01
- Grey: GS-1022 GY01
- Grey: GS-1022 GY02
- Grey: GS-1022 GY51
- White: GS-1022 WH01

### General

|                        |                                                                                                                                    |                                                                                                                       |                                                                                                                                           |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Material Status        | • Commercial: Active                                                                                                               |                                                                                                                       |                                                                                                                                           |
| Availability           | • Africa & Middle East<br>• Asia Pacific                                                                                           | • Europe<br>• Latin America                                                                                           | • North America                                                                                                                           |
| Filler / Reinforcement | • Glass Fiber, 50% Filler by Weight                                                                                                |                                                                                                                       |                                                                                                                                           |
| Additive               | • Gamma Stabilizer                                                                                                                 |                                                                                                                       |                                                                                                                                           |
| Features               | • Biocompatible<br>• E-beam Sterilizable<br>• Ethylene Oxide Sterilizable<br>• Good Chemical Resistance<br>• Good Creep Resistance | • Good Dimensional Stability<br>• Good Sterilizability<br>• High Flow<br>• High Strength<br>• Low Moisture Absorption | • Outstanding Surface Finish<br>• Radiation (Gamma) Resistant<br>• Radiation Sterilizable<br>• Radiotranslucent<br>• Ultra High Stiffness |
| Uses                   | • Dental Applications<br>• Hospital Goods                                                                                          | • Medical Devices<br>• Medical/Healthcare Applications                                                                | • Surgical Instruments                                                                                                                    |
| Agency Ratings         | • ISO 10993                                                                                                                        |                                                                                                                       |                                                                                                                                           |
| RoHS Compliance        | • Contact Manufacturer                                                                                                             |                                                                                                                       |                                                                                                                                           |
| Appearance             | • Colors Available                                                                                                                 |                                                                                                                       |                                                                                                                                           |
| Forms                  | • Pellets                                                                                                                          |                                                                                                                       |                                                                                                                                           |
| Processing Method      | • Injection Molding                                                                                                                |                                                                                                                       |                                                                                                                                           |

| Physical                            | Typical Value | Unit              | Test method     |
|-------------------------------------|---------------|-------------------|-----------------|
| Density                             | 1.78          | g/cm <sup>3</sup> | ISO 1183        |
| Molding Shrinkage                   | 0.10 to 0.30  | %                 | ISO 294-4       |
| Water Absorption (23°C, 24 hr)      | 0.16          | %                 | ISO 62          |
| Moisture Absorption - Equil, 65% RH | 1.5           | %                 | Internal Method |

| Mechanical             | Typical Value | Unit | Test method |
|------------------------|---------------|------|-------------|
| Tensile Modulus        | 22000         | MPa  | ISO 527-2   |
| Tensile Stress (Break) | 265           | MPa  | ISO 527-2   |
| Tensile Strain (Break) | 1.8           | %    | ISO 527-2   |
| Flexural Modulus       | 22000         | MPa  | ISO 178     |

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| <b>Mechanical</b> | <b>Typical Value</b> | <b>Unit</b> | <b>Test method</b> |
|-------------------|----------------------|-------------|--------------------|
| Flexural Stress   | 380                  | MPa         | ISO 178            |

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| <b>Impact</b>                  | <b>Typical Value</b> | <b>Unit</b>       | <b>Test method</b> |
|--------------------------------|----------------------|-------------------|--------------------|
| Unnotched Izod Impact Strength | 50                   | kJ/m <sup>2</sup> | ISO 180            |

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| <b>Thermal</b>                                     | <b>Typical Value</b> | <b>Unit</b> | <b>Test method</b> |
|----------------------------------------------------|----------------------|-------------|--------------------|
| Heat Deflection Temperature<br>1.8 MPa, Unannealed | 230                  | °C          | ISO 75-2/A         |
| CLTE - Flow                                        | 1.5E-5               | cm/cm/°C    | ISO 11359-2        |

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## Additional Information

Property values for individual batches will vary within specification limits. Values shown are typical of Ixef GS-1022/WH01 resin; other colorants may alter values.

There will be a shift in color when comparing pre-gamma sterilization and postgamma sterilization colors. It is also expected that the colors will revert to some degree, back toward the as-molded color. Lighter colors may display the greatest variation.

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| <b>Injection</b>       | <b>Typical Value</b> | <b>Unit</b> |
|------------------------|----------------------|-------------|
| Drying Temperature     | 120                  | °C          |
| Drying Time            | 0.50 to 1.5          | hr          |
| Rear Temperature       | 250 to 260           | °C          |
| Front Temperature      | 260 to 290           | °C          |
| Nozzle Temperature     | 260 to 290           | °C          |
| Processing (Melt) Temp | 280                  | °C          |
| Mold Temperature       | 120 to 140           | °C          |
| Injection Rate         | Fast                 |             |

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## Injection Notes

Hot runners: 250° to 260°C (482° to 500°F)

## Storage

Ixef® compounds are shipped in moisture-resistant packages at moisture levels according to specifications. Sealed, undamaged bags should be preferably stored in a dry room at a maximum temperature of 50°C (122°F) and should be protected from possible damage. If only a portion of a package is used, the remaining material should be transferred into a sealable container. It is recommended that Ixef® resins be dried prior to molding following the recommendations found in this datasheet and/or in the Ixef® processing guide.

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## Notes

Typical properties: these are not to be construed as specifications.

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